CONFIDENTIAL (FR) CLASS II-FOMC

*Materials for*

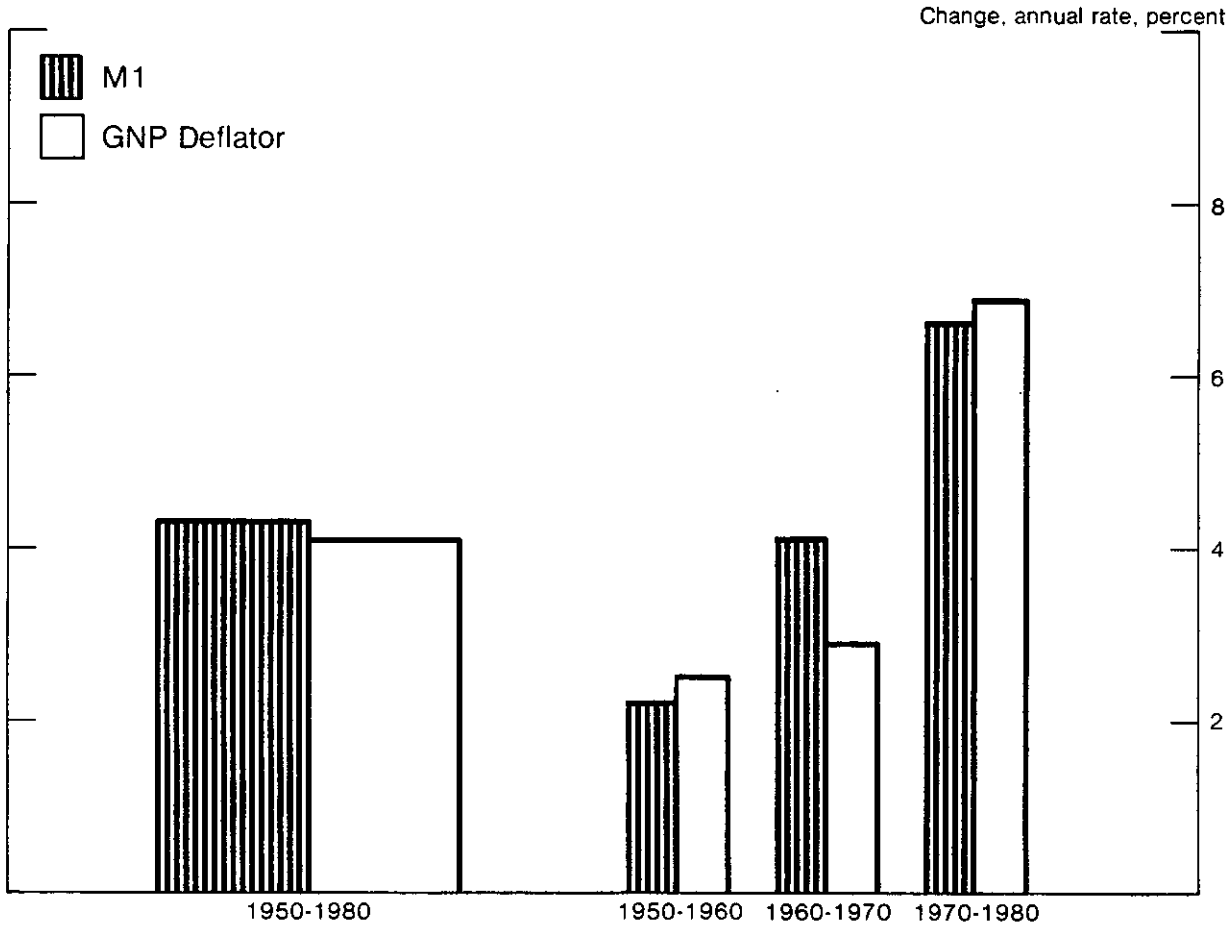
# *Staff Presentation to the Federal Open Market Committee*

*November 14, 1983*

Chart 1

# Money and Prices

## M1 and GNP Deflator




- Over the long run, money and prices tend to move together.
- Long-run neutrality of money: over long periods, changes in money only influence the price level and do not permanently affect real variables in the economy.
- The question is: how long does it take for the effects of a change in money to be entirely reflected in prices? The answer is a key feature differentiating various theories of inflation.

Chart 2

# Monetarist Theory of Inflation

**Key Features**

- Places primary emphasis on the response of inflation to the growth of the money supply.
- Changes in the money stock lead to *stable* and *predictable* short-run movements in nominal spending.
- Increases in the money stock boost nominal spending; the increased demand pressures lead to a bidding up of prices.
- The state of the business cycle plays little if any role in price determination.

## Growth in M1 and GNP Deflator

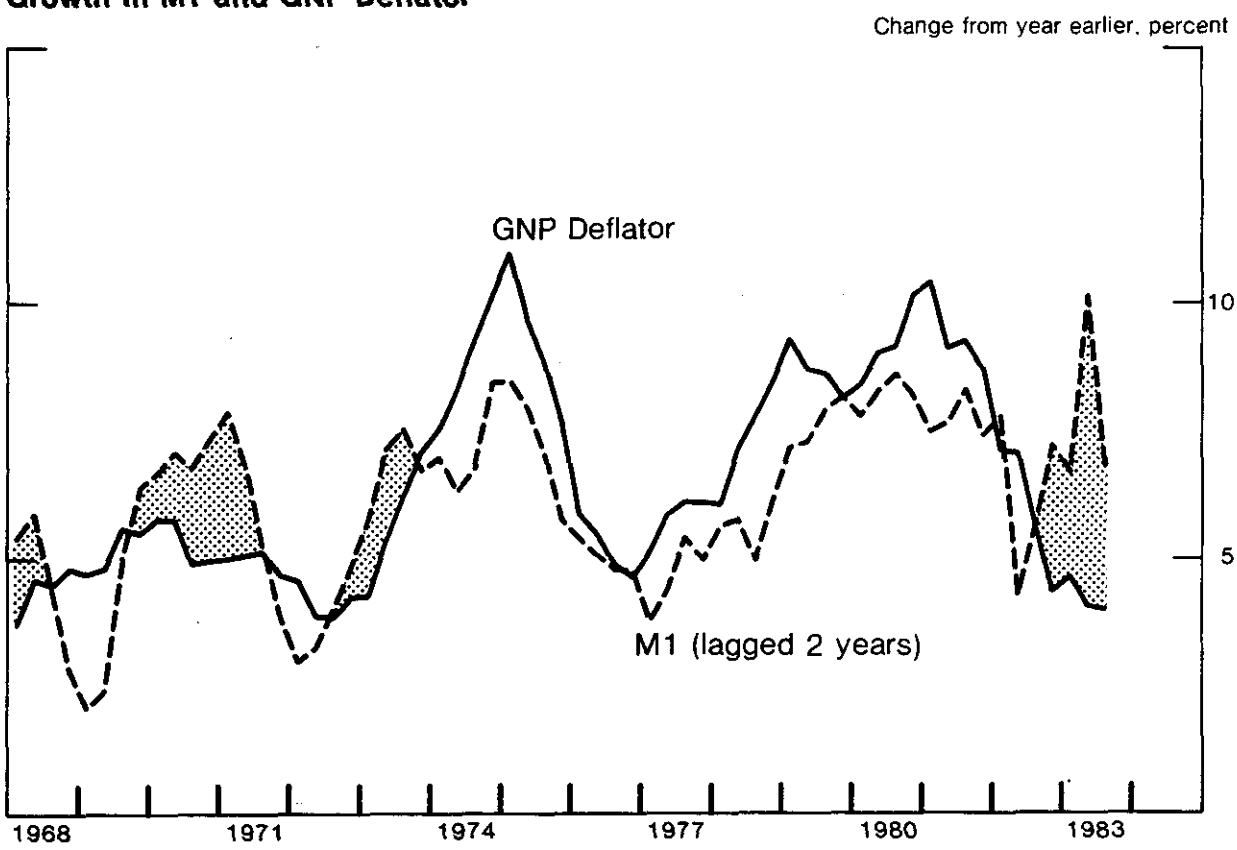
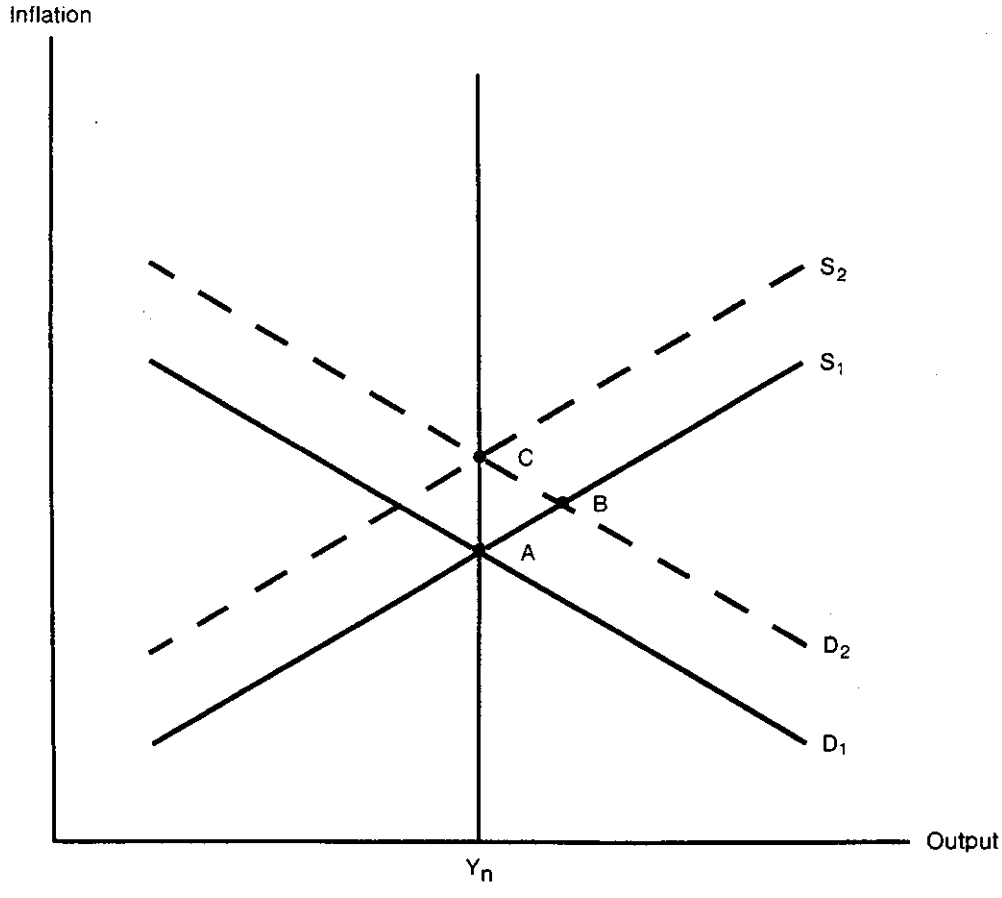


Chart 3

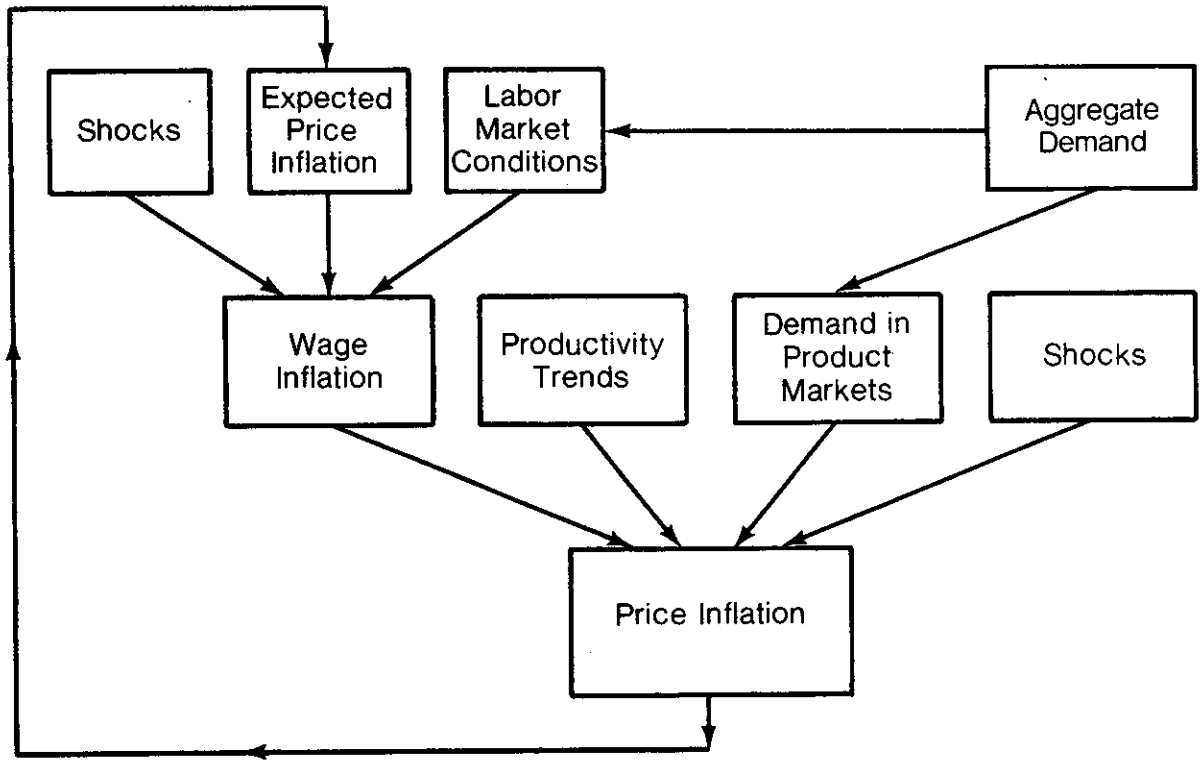
# The Natural Rate Hypothesis

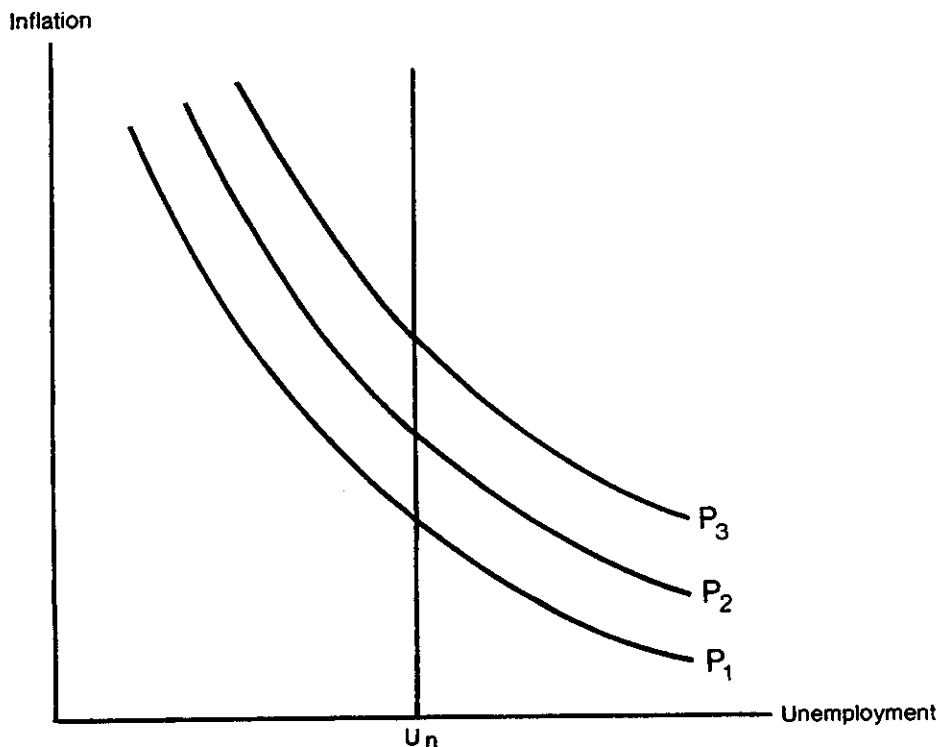



- An increase in aggregate demand from $D_1$ to $D_2$ raises inflation and output from point A to point B.
- But as workers' price expectations adjust to the higher inflation rate, the aggregate supply curve will tend to shift up from $S_1$ to $S_2$, ultimately moving the economy back to the natural level of output at a higher rate of inflation—point C.
- The rate of inflation where this process ultimately settles will be determined by the factors influencing the position of the aggregate supply and demand schedules, with one of the most important factors being the rate of growth of money.

Chart 4

# Phillips Curve View of Inflation



# The Role of Inflation Expectations

- **Phillips curve view.** Most empirical Phillips curves assume that inflation expectations are formed by looking at past price performance.
- **Rational expectations.** Individuals form forward-looking expectations using all available information.
- Individuals, in fact, probably do more than mechanically extrapolate past trends; but they probably are not as sophisticated as rational expectations theory assumes.
- Because expectations cannot be observed directly, it is important to be aware of the sensitivity of inflation forecasts to the factors affecting expectations.

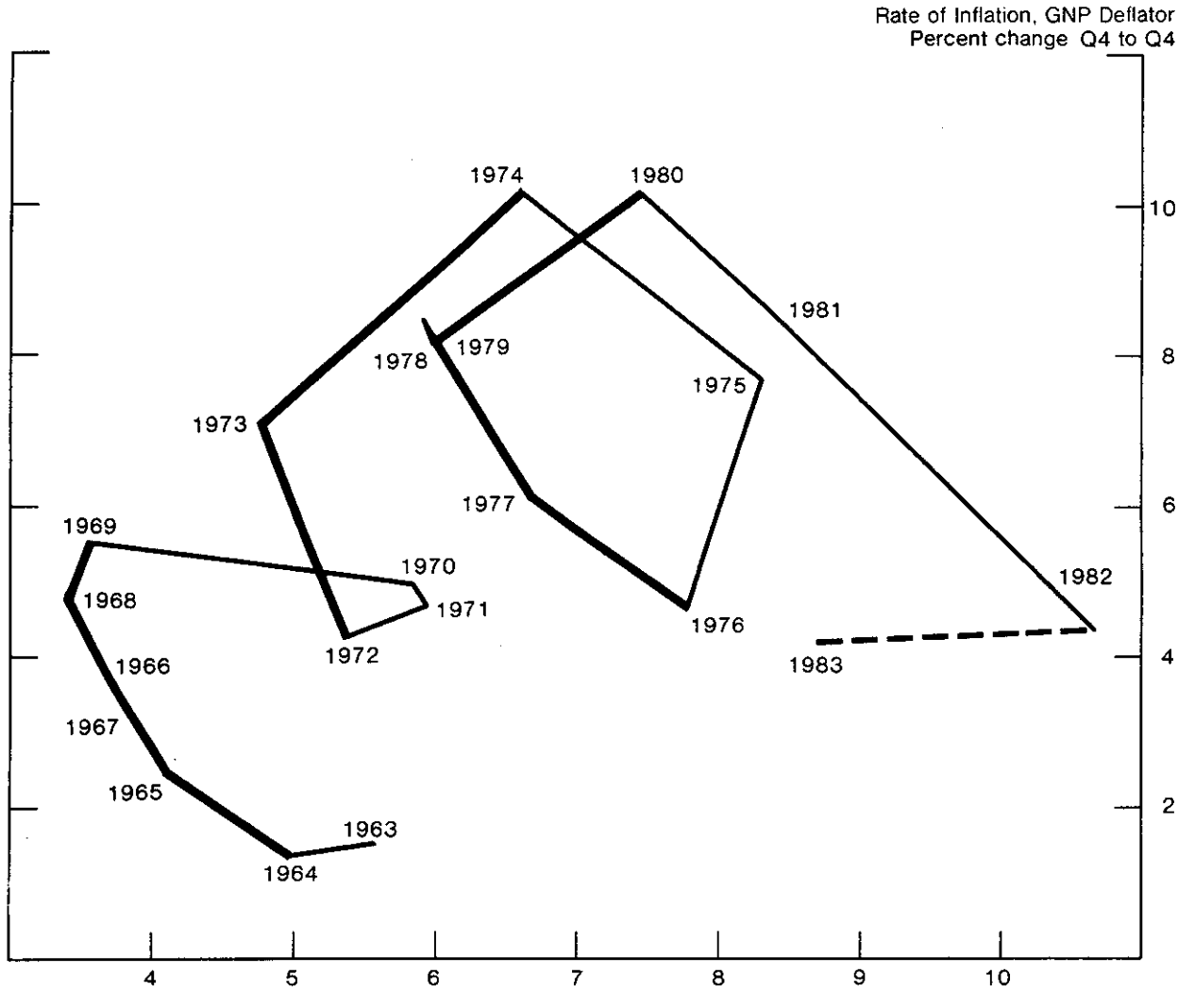
# Phillips Curve View

- Provides a detailed description of the structure and dynamics of the inflation process.
- Traces the channels of policy influences on inflation, identifying factors that may mitigate or amplify the inflationary effects of policy actions.
- Has a role for short-run effects of money on prices; the transmission mechanism involves intermediate channels operating through interest rate effects on real activity.
- Takes into consideration the existence of contracts and institutional rigidities—including government actions—that can make wages and prices less than fully flexible.

Chart 7

## Unemployment and Inflation

| | Natural Rate of Unemployment<br>Percent | Actual Unemployment Rate<br>Percent |
|---|---|---|
| 1950–1959 | 4 to 5 | 4–½ |
| 1960–1972 | 4–½ to 5–½ | 4–¾ |
| 1973–1979 | 6–½ to 7–½ | 6–½ |
| 1980–1983 | 6 to 7 | 8–½ |



# Major Factors Influencing the Natural Rate of Unemployment

- **Trend Rate of Growth of Labor Productivity**

- **Demographic Mix of the Labor Force**

- **Structure of Labor and Product Markets**

  — Introduction of inflexible work rules

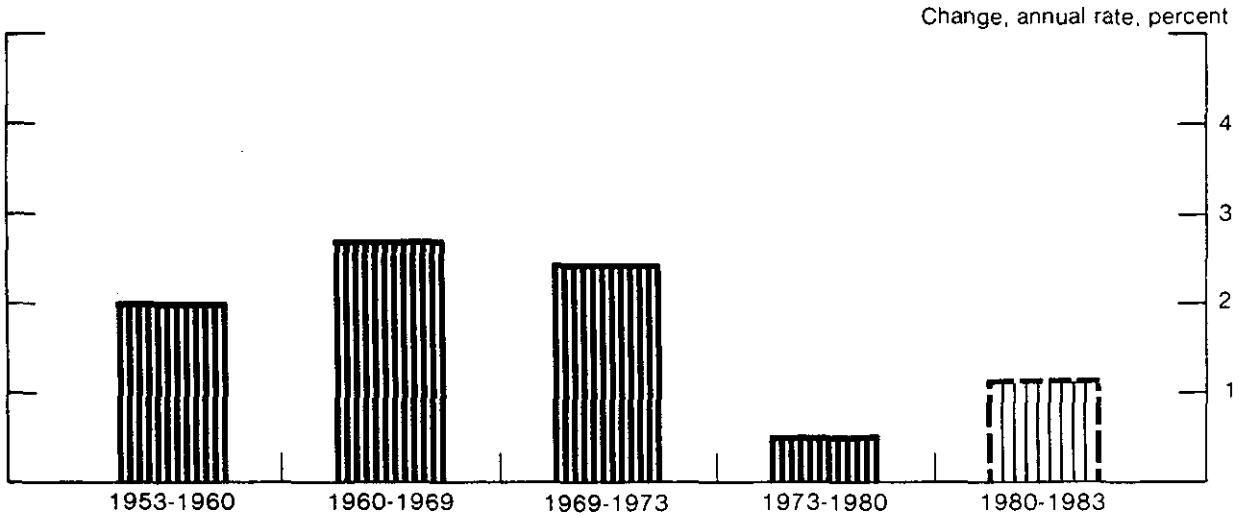
  — Increased mismatches of workers' skills and job requirements

  — Government actions, such as wage floors, protectionist trade policies, and price supports

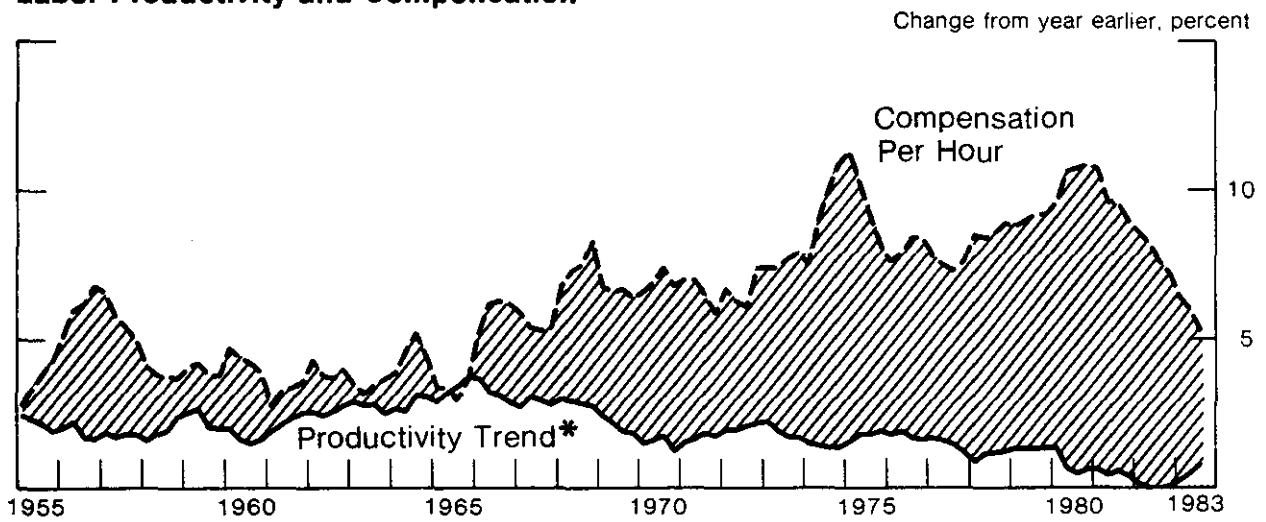
- **Income Support Programs**

  — These programs induce longer spells of unemployment by reducing the incentive to search for work and by raising the wage that jobless workers are willing to accept.

## Trend Growth of Labor Productivity




## Labor Productivity and Compensation



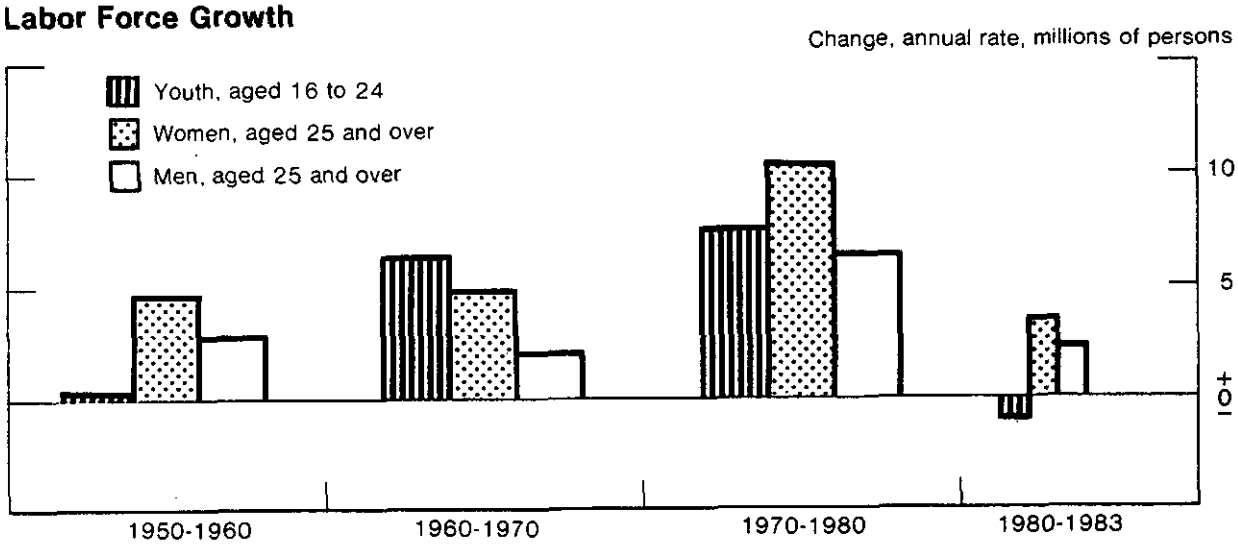

* Five-year percent change at an annual rate.

- **Labor Productivity and the Natural Rate of Unemployment**

  — Attempts by workers to obtain real wage increases in excess of the trend in productivity growth will cause an acceleration in labor costs.

  — As prices are marked up over these costs, the unemployment rate required to generate enough downward pressure on wages to stabilize inflation will rise.

## Labor Force Growth




- **Demographic Mix of the Labor Force and the Natural Rate of Unemployment**

  — Less experienced workers generally have weaker attachments to jobs and more frequent spells of unemployment; thereby increasing frictional unemployment.

  — This boosts, on balance, the measured unemployment rate associated with any given level of labor market tightness.

# Aggregate Demand and Inflation

## Channels from Aggregate Demand to Inflation

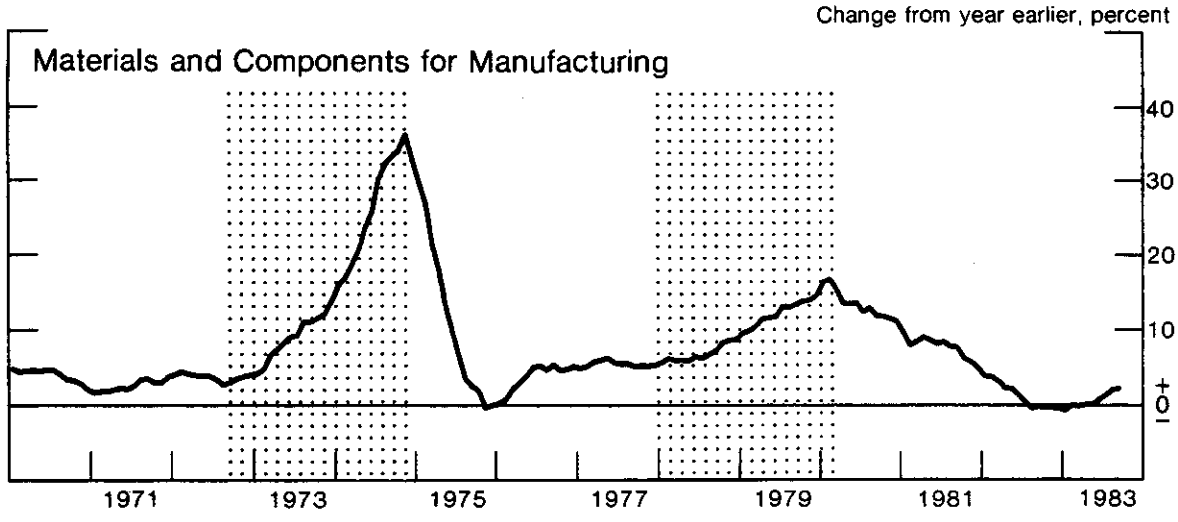
- Labor and product market conditions have a contemporaneous effect on the size of wage settlements and the markup of prices over costs.
- The full effect depends on:
  - — lags in the adjustment of inflation expectations, and
  - — inertia in wage and price-setting introduced by contracts or other institutional arrangements.

## Staff Estimates

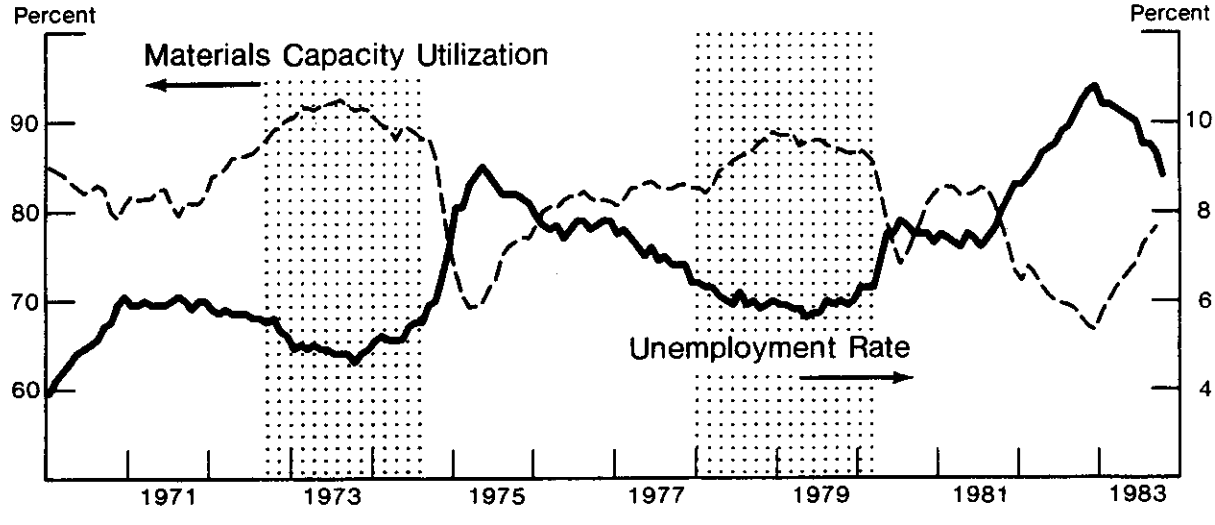
- Each additional percentage point on the **level** of joblessness, *maintained over one* year, would reduce inflation by ½ to 1 percentage point.
- Each 1 percentage point **change** in the unemployment rate over a year changes inflation by a little more than ¼ percentage point.

# Materials Prices and Capacity

## Producers' Prices




## Unemployment and Materials Capacity Utilization




### Capacity Growth

Percent change, annual rate

| | 1967–1973 | 1973–1979 | 1979–1982 |
|---|---|---|---|
| Total Manufacturing | 4.1 | 3.1 | 2.4 |
| Iron and Steel | .7 | .3 | −1.7 |
| Petroleum Refining | 4.0 | 3.7 | −.7 |
| Textiles | 5.4 | .8 | .1 |
| Total Materials | 3.8 | 3.3 | 2.0 |

## How Can Inflation Accelerate at High Rates of Unemployment?

- Government-mandated cost increases can contribute to higher prices.
- Large supply disturbances might raise the relative price of an important commodity.
- A decline in the foreign exchange value of the dollar can raise the prices of imports and of domestic goods that compete with imports.
- Rising inflation expectations could generate pressures for higher wage settlements and larger price increases.

### Expected Change in Consumer Prices

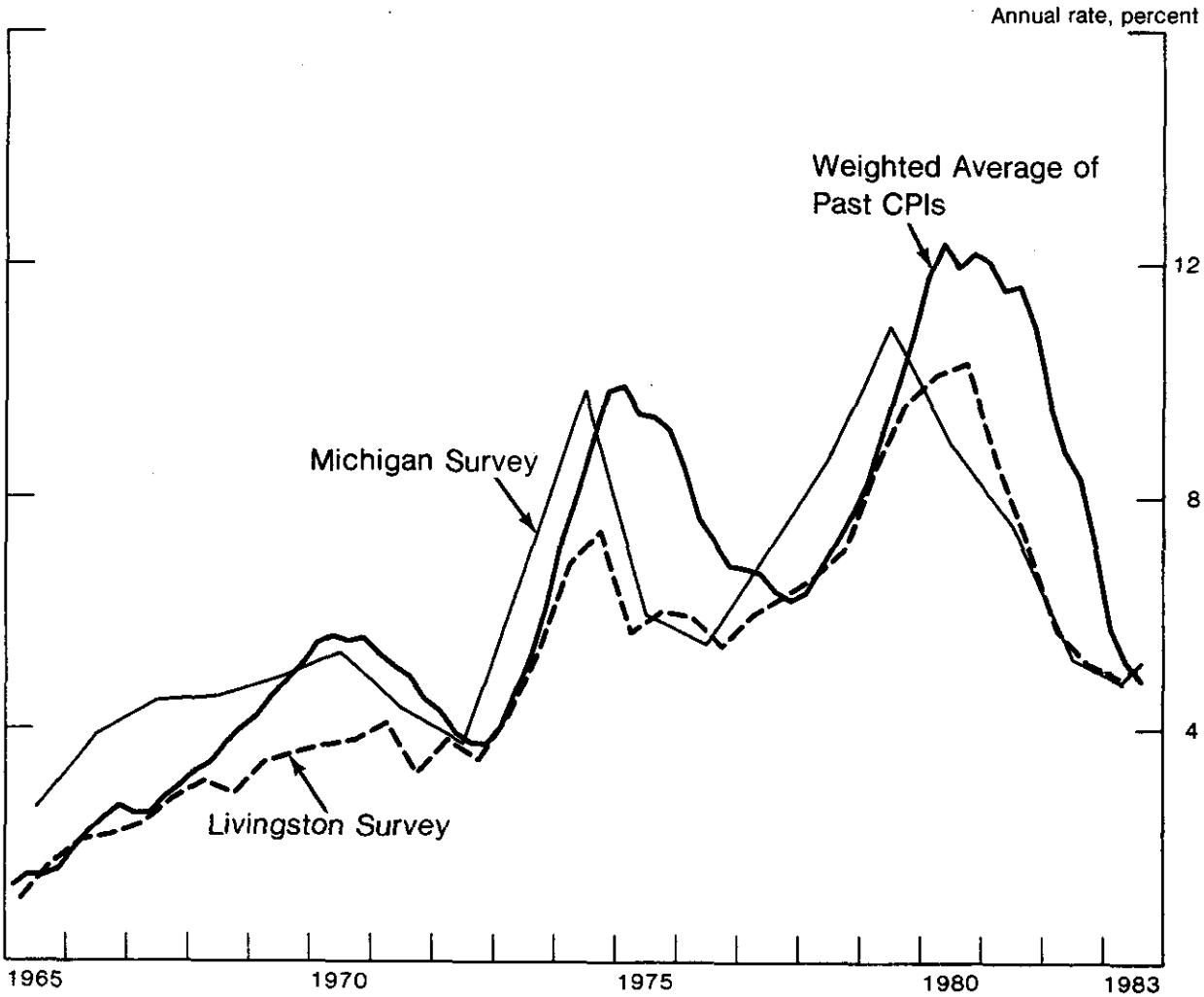
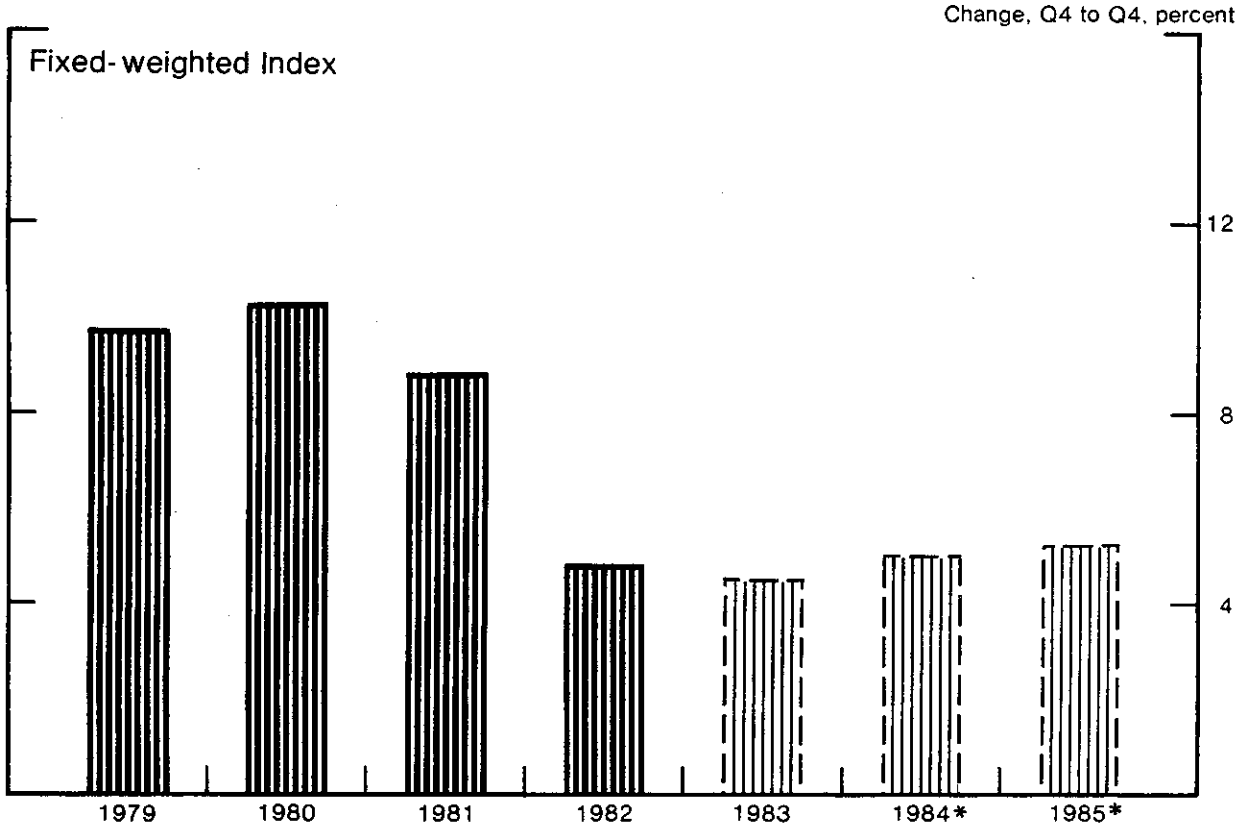


Chart 14

# Staff Inflation Projection

## Gross Domestic Business Product Prices




* Assumes 4¼ percent real growth in 1984 and 3½ percent real growth in 1985.

## Key Factors Affecting Near-term Inflation Outlook

- Considerable slack, particularly in labor markets
- Drought-induced increases in food prices in 1984
- Scheduled social security tax hike in 1984
- Projected depreciation of the dollar in 1984 and 1985
- Speed of the present recovery

Chart 15

# Staff Inflation Projection and Alternatives

**Gross Domestic Business Product Prices; Percent Change**

| | 1982-Q4 to 1983-Q4 | 1983-Q4 to 1984-Q4 | 1984-Q4 to 1985-Q4 |
|---|---|---|---|
| 1. Staff projection[1] | 4-¼ | 5 | 5-¼ |
| 2. One percent faster growth of real GNP in 1984 and 1985 | 4-¼ | 5-¼ to 5-¾ | 5-¾ to 6-½ |
| 3. One percent slower growth of real GNP in 1984 and 1985 | 4-¼ | 4-¼ to 4-¾ | 3-¾ to 4-½ |
| 4. Two percent trend growth of productivity | 4-¼ | 4 to 4-½ | 3-½ to 4 |
| 5. Stronger exchange rate[2] | 4-¼ | 4-½ to 4-¾ | 4-¼ to 4-¾ |

1. Assumes 4-¼ percent real growth in 1984 and 3-½ percent real growth in 1985.
2. Assumes dollar maintains 1983-Q3 level.

Chart 16

# Monetarist Projections of Inflation

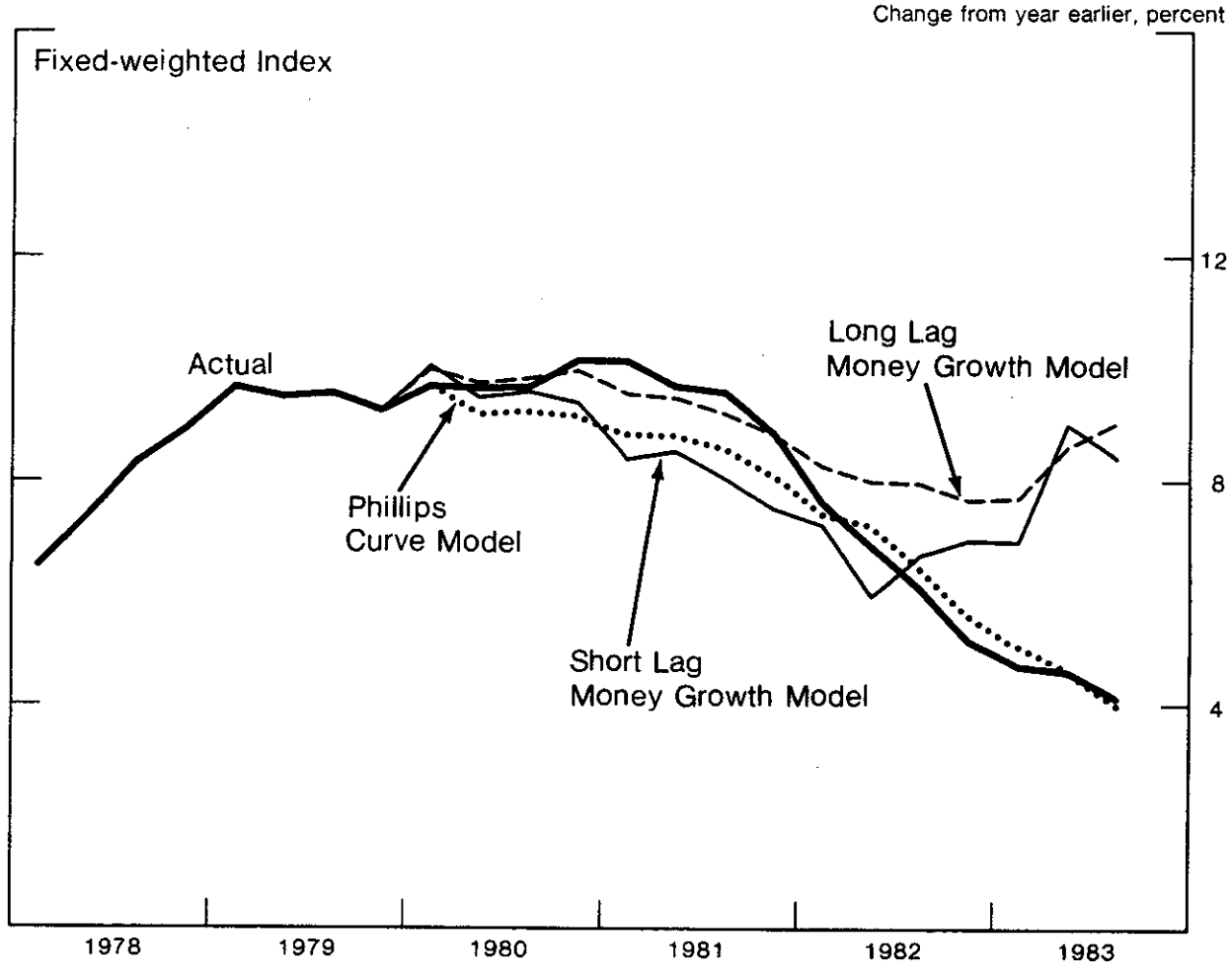
**Gross Domestic Business Product Price Index; Percent Change**

| | 1982-Q4 to 1983-Q4 | 1983-Q4 to 1984-Q4 | 1984-Q4 to 1985-Q4 |
|---|---|---|---|
| 1. Eight quarter adjustment of prices to money growth[1] | 4-¼ | 7-½ to 8-¼ | 6-½ to 7 |
| 2. Sixteen quarter adjustment of prices to money growth [1] | 4-½ | 8-½ to 8-¾ | 9-½ to 10 |
| 3. Staff projection[2] | 4-¼ | 5 | 5-¼ |

1. Range of estimates includes models with and without the relative price of energy.
2. Assumes 4-¼ percent real growth in 1984 and 3-½ percent real growth in 1985.

# Recent Forecast Performance

## Gross National Product Prices




| | 1980-Q1 to 1983-Q3 | |
|---|---|---|
| | Mean Error | Mean Absolute Error |
| 1. 8 quarter adjustment of prices to money growth[1] | −.83 | 2.30 |
| 2. 16 quarter adjustment of prices to money growth[1] | −1.64 | 2.01 |
| 3. Phillips Curve Model | .30 | .90 |

1. Model includes the change in the relative price of energy.

# Price Stability by 1988

| | 1984 | 1985 | 1986 | 1987 | 1988 |
|---|---|---|---|---|---|
| **The baseline case** | | | | | |
| 1. Unemployment Rate (Q4) | 8.5 | 8.6 | 8.9 | 9.0 | 8.7 |
| 2. Real GNP (Q4/Q4) | 3.3 | 1.5 | 1.2 | 2.6 | 3.5 |
| 3. Nominal GNP (Q4/Q4) | 7.5 | 5.9 | 4.2 | 4.3 | 4.2 |
| 4. M2 | 6.0 | 5.5 | 4.7 | 4.4 | 4.5 |
| 5. GNP Deflator (Q4/Q4) | 4.2 | 4.4 | 3.0 | 1.7 | .7 |

**Key baseline assumptions**

- monetary policy change implemented quickly enough to lower growth in 1984 from current projection
- fiscal actions to reduce the deficit beginning in 1985
- growth of trend productivity of 1.1 percent annually
- no food or energy price shocks

**Alternative Assumptions**

- Sharper drop in the exchange rate resulting from exogenous factors.
  **Result:** raises required unemployment path
- Higher trend productivity.
  **Result:** lowers required unemployment. If trend productivity growth is 2 percent, the average unemployment rate required for price stability would be one percentage point lower.
- Government action to reduce regulations boosting costs and prices.
  **Result:** lowers required unemployment path
- "Credible" disinflation policy and lower inflation expectations.
  **Result:** lowers required unemployment path